



The **topics** and **types of questions** examined in this Achievement Standard. Use this sheet to plan and organise your study so that you cover everything that is required.

FREE DOWNLOADS: For more of these Revision Checklists visit www.studypass.co.nz

StudyPass

Copyright © 2009 Growing Minds Ltd.

NCEA Study Packs contain the past NCEA questions for all exams for each of these topics. Full answers, explanations and a set of summary course notes. View all titles at www.studypass.co.nz



1.2 GRAPHS

AS 90148

Sketch and interpret graphs

1.2 1. Drawing graphs given the equation

A

- linear equations of the type $y = mx + c$, $x = a$, $y = b$ or of the type $y = \pm x^2 + c$
- factorised quadratics

► Draw the graphs of:

- (a) $x = 6$ (b) $y = 8$
(c) $y = 2x + 1$ (d) $y = (x - 2)(x + 4)$

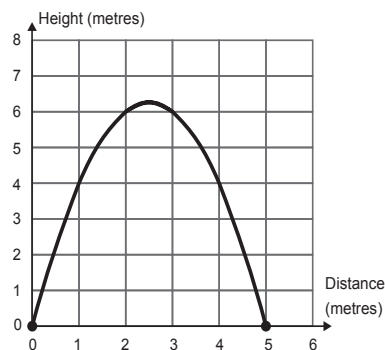
1.2 2. Sketch and interpret features of graphs (1)

A M

- linear equations
- factorised quadratics
- features could include x and y intercepts, maxima and minima, axes of symmetry and gradients of straight lines.

► The entrance to the pool is a small tunnel that can be modelled by the quadratic equation: $h = d(5 - d)$ where h = height of the tunnel (in metres) and d = distance from the left-hand edge of the tunnel (in metres)

The graph for the height of the tunnel is shown below.



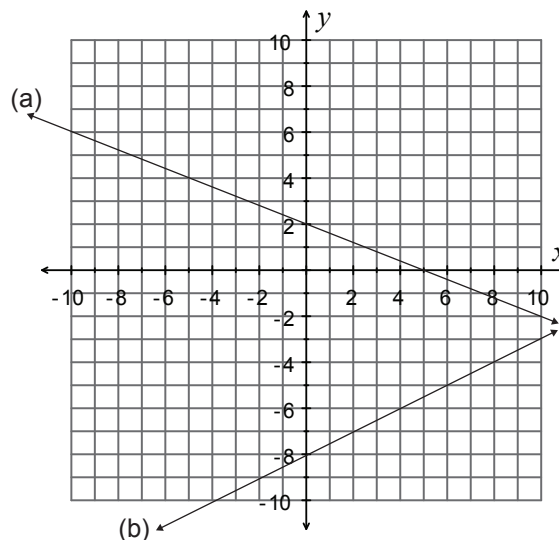
- (a) (i) What is the maximum width of the tunnel?
(ii) How is this shown on the graph?
(b) (i) What is the maximum height of the tunnel?
(ii) How is this shown on the graph?

1.2 3. Write equations for linear graphs

M

- given straight line graphs, write the equation

► Write the equations of the lines drawn on the grid below:



1.2 4. Drawing graphs given the equation in any form

M

- linear equations in any form
- quadratic equations, which may have coefficients of x^2 other than ± 1

► Draw the graphs of:

- (a) $5y - 4x = 20$ (b) $y = -x^2 + 6x - 8$
 $= (4 - x)(x - 2)$
(c) $y = 2x^2 + 8x$ (d) $3y - 2x = 12$
(e) $y = 8 + 2x - x^2$ (f) $y = \frac{x^2}{2} - 8$
 $= (x + 2)(4 - x)$

1.2 5. Sketch and interpret features of graphs in context (2)

M

- linear equations in any form
- quadratics in any form
- features could include x and y intercepts, maxima and minima, axes of symmetry and gradients of straight lines.

► John and Richard were playing with a soccer ball.

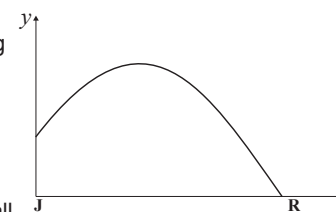
The graph shows the height of the ball above the ground, during one kick from John, J, towards Richard, R.

The height of the ball above the ground is y metres.

The horizontal distance of the ball from John is x metres.

The graph has the equation $y = 0.1(9 - x)(x + 1)$.

- (a) Write down the value of the y -intercept **and** explain what it means in this situation.
(b) What is the greatest height of the ball above the ground?



1.2 6. Determine and apply an appropriate model

E

- writing equation(s) from a graph to solve a problem
- drawing a graph to find the solution to a problem

► The percentage of Eco Cab taxis that **do not** run on bio-fuel will decrease every year.

This year there are no Eco Cab taxis running on bio-fuel. It is predicted that in five years' time, all Eco Cab taxis will be running on bio-fuel.

Write the equation for the **parabola** that matches the shape of the graph and models this situation.

Use your equation to find how long it will be before 50% of the Eco Cab taxis will be running on bio-fuel. You must show the equation you use to find the solution to this problem.

